

Policy Report on AB 1890 Renewables Funding

STAFF DRAFT

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Project Manager
Marwan Masri

Principal Authors

Cheri Davis	Sandy Miller
Bob Huffaker	Vince Schwent
Suzanne Korosec	Tim Tutt
Pramod Kulkarni	

DISCLAIMER

This draft staff document was prepared by staff of the Energy Technology Development Division assigned to the AB 1890 Renewables Report Project with assistance from consultants and staff in other divisions. It is an attempt at synthesizing the various proposals presented by several parties consistent with public policy objectives. Its main purpose is to offer a starting point for developing a proposal to the legislature and receive public comments on it in order to assist the Renewables Program Committee in the preparation of its recommendations to the full Commission. The views and recommendations contained in this document are the staff's and do not necessarily represent the views of the Renewables Program Committee or the Energy Commission.

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EXECUTIVE SUMMARY

Background

Assembly Bill 1890, enacted on September 23, 1996, deregulated the electricity industry and established broad funding and allocation guidelines for support of renewable electricity generation technologies over the period 1998 through 2001. In addition, the legislation directed the California Energy Commission to “report to the Legislature by March 31, 1997 with recommendations regarding market-based mechanisms to allocate the available funds.” This document is the Staff Draft Report in response to the requirements of AB 1890.

The Energy Commission began proceedings to collect input from stakeholders with an En Banc hearing on October 16, 1996. This hearing was followed by a series of five Renewable Program Committee workshops during the month of November and a Staff workshop in the early part of December. Stakeholders presented proposals on the allocation of funds to the broad technology status categories and to specific technologies, mechanisms for distributing the funds, and certification issues. The development of this proposal involved careful review of all information presented by participants in the November and December Energy Commission workshops. Staff also considered the input of Energy Commission staff experts and consultants who are knowledgeable about the various industries and technologies.

Guiding Policy Objectives

The Staff proposal is guided by broad policy objectives contained in AB 1890 with an overall goal *to maximize the effectiveness of the AB 1890 renewable funds*. Staff proposes that effectiveness of this State renewables program be measured by accomplishment of three broad policy objectives, derived from language in AB-1890 and subsequent testimony:

- 1) maintaining the benefits and diversity of the renewables industry in a competitive electricity industry;
- 2) encouraging the development of new renewable resources and the advancement of new and emerging renewable technologies that show reasonable potential to become cost-competitive; and
- 3) facilitating the development a self-sustaining customer-driven renewables market in the State.

AB 1890 also recommended general methods to be considered in development of this State renewables program. The legislation requires consideration of ‘market-based approaches’, of rewarding the ‘most cost-effective’ resources, and of the use of ‘financing and other mechanisms to maximize the effectiveness of available funds.’ Staff’s proposal incorporates each of these features to accomplish the objectives through the following specific actions:

- 1) providing assistance to the existing renewables industry commensurate with needs, demonstrated potential to become competitive, and available funds, while encouraging the development of markets for new and emerging renewable energy projects;

- 2) minimizing assistance to industries that will likely become competitive without additional ratepayer funding assistance;
- 3) allocating sufficient funds to remaining industries to meet the needs of projects that show promise of becoming competitive;
- 4) encouraging the development of a renewables marketing infrastructure by: a) providing incentives for consumers to purchase renewable energy; b) allocating funds for consumer education and market research; and c) encouraging existing and repowered renewables to compete in the direct access market; and
- 5) recommending distribution mechanisms and eligibility criteria that will minimize administrative costs, *allow the market* to weed-out projects that are unlikely to become cost-competitive, and encourage renewable suppliers to improve operations and reduce costs.

Allocation of AB 1890 Funds

AB 1890 established a fund of \$540 million dollars to support existing, new and emerging renewable electricity generation technologies. The legislation also directed the establishment of two additional sources of potential funds: voluntary contributions from electricity consumers and public-purpose support from customer-owned (municipal and special district) utilities. Staff's proposal does not currently account for contributions from these additional sources, because no specific amounts from these sources can be clearly allocated to renewable resources at this time. Staff request comments about how any funds received through voluntary contributions or municipal utilities should be allocated.

In addition to the broad legislative guidance described on the previous pages, AB 1890 also directed that at least 40% of the funds collected be used to support 'existing' renewable resources, and at least 40% would be used to support 'new and emerging' renewables. Furthermore, the legislation requested consideration of mechanisms that would "allow customers to receive a rebate from the fund" and foster "a market for renewable resources."

Figure ES-1
Staff Draft Proposal for AB 1890 Renewables Funding Allocation

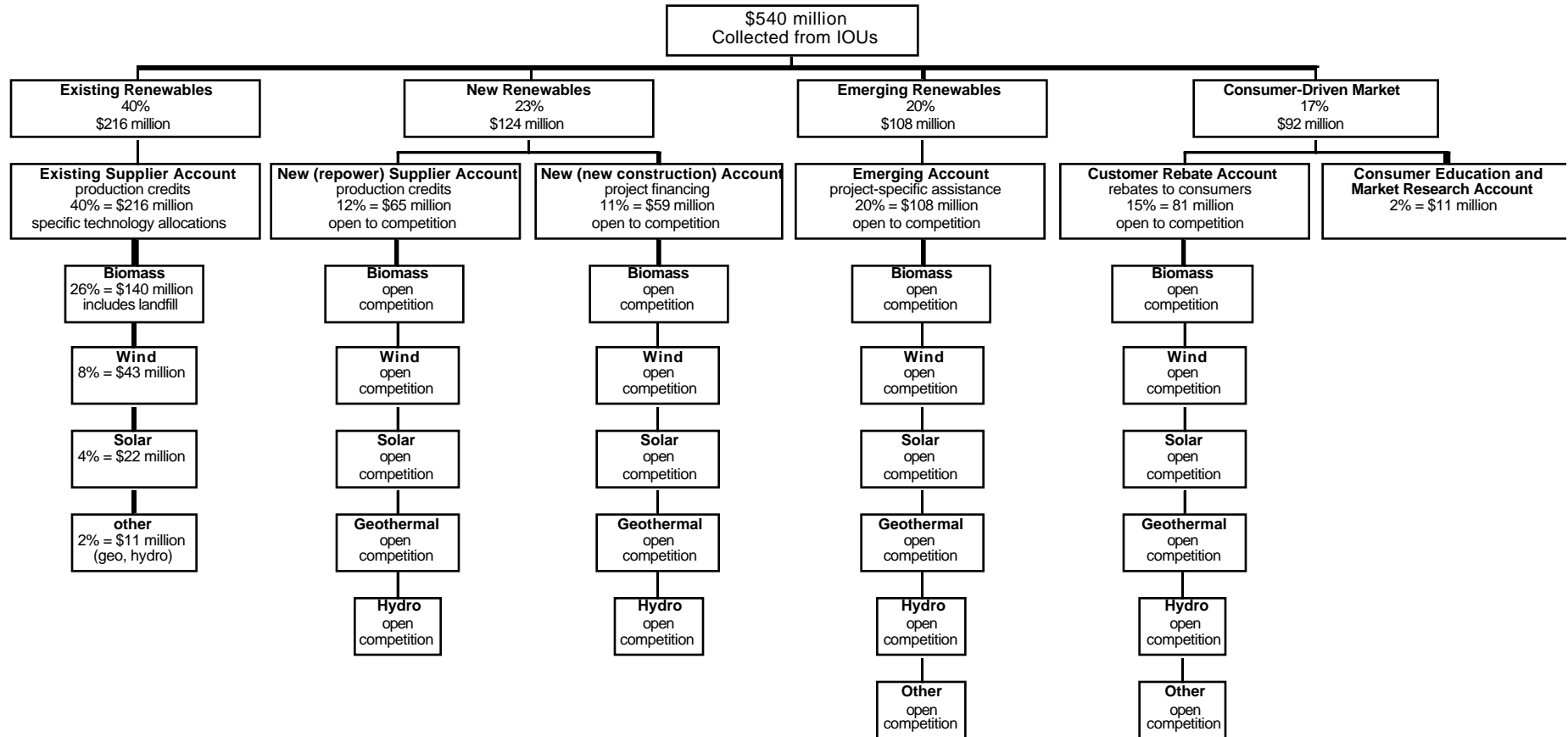


Figure ES-1 shows Staff's proposed allocation of the \$540 million of renewables funding to be collected as directed in AB 1890. According to this proposal, the AB 1890 renewables funding would flow through six "accounts." These funding accounts are designed to meet the funding needs of industry within the goals and objectives of AB 1890. Each technology status category (existing, new, and emerging) is assigned an account (or, in the case of new technologies, two accounts). Two additional accounts, the customer rebate account and the consumer information and market research account, are designed to serve the needs of the industry as a whole and to meet the policy objective of developing a market for renewables.

Staff's proposed allocation of funds ensures that at least 40% of the funds will support existing renewables, and that at least 43% will support new and emerging renewables. The remaining 17% of the funds are allocated to building the consumer side of the market. Depending upon consumer and marketer decisions, and the availability of renewables in the direct access market, the consumer-side funds could benefit existing, new, or emerging renewable resources. In a competitive market with correct price signals, consumer choices as expressed through power providers will determine the final outcome.

Table ES-1
AB-1890 Allocation Accounts

Account	1998	1999	2000	2001
Existing Supplier-Side	40%	40%	40%	40%
Open Consumer	15%	15%	15%	15%
New Supplier-Side	12%	12%	12%	12%
New/Emerging Financing	15%	15%	15%	15%
Emerging	16%	16%	16%	16%
Marketing	2%	2%	2%	2%

While the allocations currently do not vary over the four years covered (see Table ES-1), Staff are considering variation in the allocation of funds over time (while preserving the overall 40% limits for the existing and the new and emerging categories). Reevaluation of the needs among categories and success of the accounts and mechanisms established could lead to reallocation over time. Eligibility mechanisms that affect how funds are spent and adjustment mechanisms that govern unspent funds may also affect the timing of the proposed allocations. Staff does not intend that reallocation be designed to reduce the level of payment to entities that already have a legitimate claim to the funds.

The allocations in this proposal to specific technologies, and even across technology status categories, should not be set in an inflexible manner over the four year funding period. Staff recognize that the status of technologies may change, requiring adjustments in the allocation scheme to maximize the effectiveness of remaining funds. Funding for specific projects should not be reduced once committed, unless that funding is conditioned upon performance milestones. However, if certain funding accounts are over-subscribed or under-subscribed, it may be appropriate to move funds that are not yet committed to other accounts that can make better use of the money. Staff recommend the development of mechanisms that will automatically trigger this re-

allocation of funds, if necessary, at a later date. Staff welcome comments about how funds may be reallocated between accounts over time.

Technology-Specific Allocation of Funds

Within the existing technology account, Staff's proposal also allocates to specific renewable technologies as shown in Table ES-2. All other accounts in this proposal are open to "competition" by all technologies, subject to specific eligibility criteria, and are not allocated by technology. The one exception to this is the emerging technology category. Photovoltaics are specifically identified in AB 1890 and will receive a specified, but as yet undetermined, allocation of funds from the emerging account, up to a proposed limit of 60 percent of the emerging funds.

Table ES-2
Technology-Specific Fund Allocations

Technology	Allocation for Existing Supplier Account
Biomass (including landfill gas)	26% = \$140 million
Wind	8% = \$43 million
Solar Thermal	4% = \$22 million
Geothermal	no specific allocation
Hydro	no specific allocation
Other	2% (open to geothermal and hydro)

These allocations reflect Staff's general application of the 'triage' principle.¹ The levels of funding requested by each industry segment suggests that AB 1890 may provide insufficient funding to support the entire renewables industry, and it is therefore important to maximize the efficiency with which these funds are spent. If triage were applied to the renewables industry, the priority would be to provide support to industries or projects that 1) demonstrate need, and 2) have the greatest potential to become competitive in the near term. Those projects that do not require support, or that cannot be made sustainable in the near term, would receive no assistance. While triage may be an efficient method for creating a self-sustaining industry, it is not an easy principle to apply in a simple, efficient and equitable manner.. With project-specific data generally not publicly available for all types of technologies, Staff have applied the triage principle in a broad sense at the technology level.

Staff suggests, based on available information, that the existing geothermal and hydro industries will largely remain competitive without support, but that the biomass (including landfill gas), wind, and solar thermal industries do require support in order to become competitive. In accordance with the triage method, the Staff proposal sets aside funds specifically for the biomass, wind, and solar industries, but nothing specific for either geothermal or hydro. The Staff proposal does, however, allocate 2% of the existing account to a fund for "other" technologies. This fund

¹ Triage is a method, used in medical emergency situations, to sort and allocate treatment to patients according to a system of priorities designed to maximize the number of survivors. Triage is a necessary tool when there are insufficient resources (i.e. time, doctors, or supplies) to treat all patients.

would be open to any technologies without earmarked allocations (e.g. geothermal, hydro), and would be used to provide a project-specific source of support for existing projects that can demonstrate both need and viability.

The Staff proposal further allocates support to technologies through a Consumer account. This account, which contains 15% of AB 1890 funds, provides an incentive for customers, marketing agents, and renewable projects alike, for the purpose of developing a customer-driven market for renewables. While the rebates are directed to consumers, the benefits would accrue to all players that take part in the direct access market. As a true market-based mechanism, these funds would benefit projects that are competitively-priced (or nearly so), or that are able to effectively "market" their product based on other non-price factors.

Distribution Mechanisms

Each renewable technology industry is affected by unique economic challenges and opportunities that require unique solutions. Each of the broad technology status categories (i.e. existing, new, and emerging) also require different forms of assistance. It is Staff's intention to develop a plan that is simple and inexpensive to administer; however, Staff recognize that the distribution mechanisms for the renewable funds should not be oversimplified to the extent that they would not be helpful to those industries supported by any particular allocation account. After careful consideration of the particular needs of each technology category, Staff proposes the use of six distribution mechanisms which correspond directly with the six proposed allocation accounts. These mechanisms and the corresponding allocation accounts are summarized in Table ES-3.

The proposed distribution mechanisms have built-in flexibility because unexpected developments within fuel or technology types or within the general technology status categories may occur during the transition period. The distribution mechanisms should either automatically account for these changes, or include pre-determined adjustment safeguards that will prevent gross overpayment or underpayment in any particular category. These adjustment mechanisms, explained in Chapter III, can affect the timing and allocation of AB 1890 funds within the broad accounts established.

Certification of Suppliers and Providers

Participants in the Energy Commission workshops on renewables generally agreed that certification should be kept simple. Self certification followed by some sort of verification was recommended by most parties. Parties had different ideas about whether projects, providers, or just kWh would be certified, and about who should oversee and/or verify that certification is accurate and reliable. Finally, parties also had slightly different ideas about the content and timing of certification filings.

Staff propose that certification be based upon the definitions of renewable resource categories in AB 1890 and this report. Staff's mechanism would certify both electricity suppliers (generators) and electricity providers (e.g., marketers, aggregators, or suppliers that sell directly to consumers). A single type of certification would apply to both accelerated direct access and projects wishing to receive renewables funds, but projects that wish to receive funds would be subject to eligibility requirements for those funds as explained in Chapter II. Certified suppliers and providers would file simple quarterly reports with the Energy Commission that would be used to calculate the level of payments to be made from the AB 1890 funds.

Microcogen, VOC Generation and Fuel Cells

Staff recommend that microcogen and VOC generation be provided an exemption from CTC collection. Staff propose that fuel cells be found to meet the definition of renewable technology when they use non-fossil fuels and that they be found to fall within the category of fuel switching for purposes of CTC exemptions, regardless of fuel.

Table ES-3
Summary of Eligibility Requirements/Exclusions For
Funding and Distribution Mechanisms, by Account

Account Name	Distribution Mechanism	Eligibility Criteria	Exclusions
Existing Technologies Account	Per kWh production incentive <ul style="list-style-type: none"> • amount varies, determined quarterly • suggested caps vary by technology 	<ul style="list-style-type: none"> • meets definition as an "existing" renewable technology 	<ul style="list-style-type: none"> • facilities w/ fixed energy payment contracts • facilities under utility ownership • facilities with SO2 contracts dated post gas price collapse
New (Repower) Account	Per kWh production incentive <ul style="list-style-type: none"> • amount varies, determined quarterly • suggested caps vary by technology 	<ul style="list-style-type: none"> • meets definition as a "new" renewable technology • refurbished portion of facility is at least 80% of new facility's total value 	<ul style="list-style-type: none"> • project must not have received financial assistance through the new (new construction) account
New (New Construction) Account	Project financing assistance • includes loan guarantees & interest rate buy-downs	<ul style="list-style-type: none"> • meets definition as a "new" renewable technology • completely new construction (not a repower) 	
Emerging Technologies Account	As needed, on a project-by-project basis <ul style="list-style-type: none"> • includes loan guarantees, interest rate buy-downs, customer purchase rebates, and other forms of assistance 	<ul style="list-style-type: none"> • technology must be commercially available, w/ at least 1 vendor offering equipment for sale in CA • minimum 1 year of available performance data from full-scale facility • must be a grid-connected technology • new electricity generating process (not an incremental improvement to existing technology) • must be a project designed to produce electricity (not a data-gathering project) 	
Customer Rebate Account	Customer rebates for renewable power purchases <ul style="list-style-type: none"> • rebates awarded to customers through power purchases 	<ul style="list-style-type: none"> • credits awarded only to consumers of certified renewable power, purchased through the direct access market 	
Consumer Information & Market Research Account	N/A	N/A	

Definitions

A list of proposed definitions for specific AB 1890 terms is provided in this report. In addition to basic definitions of these terms, further eligibility criteria are proposed for determining which projects are eligible for funding in the various AB 1890 accounts. These criteria can be found in the Chapter II of the report.

Existing renewable resource technologies are defined as those placed in operation prior to September 23, 1996, the date of enactment of AB 1890. New renewable resource technologies are those facilities built or substantially refurbished and returned to service on or after September 26, 1996. The Staff proposal is based on the Internal Revenue Service requirement for the wind industry, which specifies 80% new content. Staff believes that this report is not the proper forum to address the issue of expanding the definition of renewables to include technologies that utilize more than 25 percent fossil fuels.

AB 1890 leaves it to the Energy Commission to determine exactly which technologies, if any, other than photovoltaics, are emerging renewable technologies. Staff offer four criteria that a technology must meet in order to be designated as emerging and three additional criteria that would be used to determine which emerging technologies would actually receive support from AB 1890 funds. These criteria are intended to determine which candidates for emerging technology status have emerged from research and development and have significant commercial potential, as required by AB 1890. The criteria are explained in Chapter II of this report.

I. INTRODUCTION

Background

Assembly Bill 1890, enacted on September 23, 1996, provided legislative foundation for development of a competitive market for electricity in California, fostering a *market-driven* rather than highly regulated electricity industry. This groundbreaking legislation included direction to:

- create an Independent System Operator (ISO) and Power Exchange (PX) to manage California's electricity transmission network and establish a market price for electricity traded over that network;
- authorize direct transactions between electricity suppliers and end-use customers, subject to a nonbypassable charge until 2002 (with some exceptions and extensions) to recover the expected costs of transitioning to a competitive market;
- establish a rate freeze for investor-owned utility electricity sold in California at 1996 levels until the year 2002, with an immediate 10% reduction in residential rates; and
- collect funding for public purpose programs - including energy efficiency, renewable generation, public-interest research and development, and low income support programs - over the transition period.

Renewable Generation

AB 1890 directs the collection of \$540 million to support existing and new and emerging renewable electricity generation technologies over the period 1998 through early 2002. It also requires utilities to allow customers to make voluntary contributions to support renewables. The legislation directs that these funds be transferred to the California Energy Commission and held pending further administrative and expenditure criteria guidelines from the Legislature. The funds are to be used to:

- 1) support the operation of existing and the development of new and emerging in-state renewable resources;
- 2) support the operations of existing renewables that provide fire suppression benefits, reduce landfill materials, and mitigate open-field agricultural burning; and
- 3) support the operations of existing innovative solar thermal technologies that provide peak generation and reliability benefits.

AB 1890 directed the Energy Commission to report to the Legislature by March 31, 1997 with recommendations regarding *market-based mechanisms* to allocate the available funds for support of renewable generation technologies. The legislation indicates that options to be considered include:

- 1) rewarding the most cost-effective generation;
- 2) certifying eligible renewable resource providers;

- 3) allowing customers to receive a rebate from the renewables fund;
- 4) allocating at least 40% of total funds to existing, and at least 40% to new and emerging renewables; and
- 5) considering financing to maximize the effectiveness of the available funds.

Finally, the report is also directed to include consideration of mechanisms to ensure the competitiveness of microcogeneration and cogeneration fueled by pollution, and consideration of whether fuel cells should be treated as fuel switching under the legislation. This report is the Energy Commission's Staff Draft Report in response to these renewable requirements.

Energy Commission Process

The Energy Commission began proceedings to collect input from renewables stakeholders with an En Banc Hearing on October 16, 1996. This hearing was followed with a series of six Committee and Staff workshops during the month of November and the early part of December. Staff and stakeholders presented proposals and comments about:

- the allocation of funds,
- mechanisms for distributing the funds,
- certifying renewable energy providers, and
- definitions.

Written proposals and comments were also received at and subsequent to the public workshops.

The development of this draft report involved the review of all proposals and comments from participants in the November and December Energy Commission workshops. Staff also considered the input of Energy Commission staff and consultants with expertise about the various technologies and funding mechanisms proposed. Finally, Staff reviewed the information contained in the Renewables Working Group Report to the CPUC and a significant amount of additional background information about the renewable industries and their development in California.

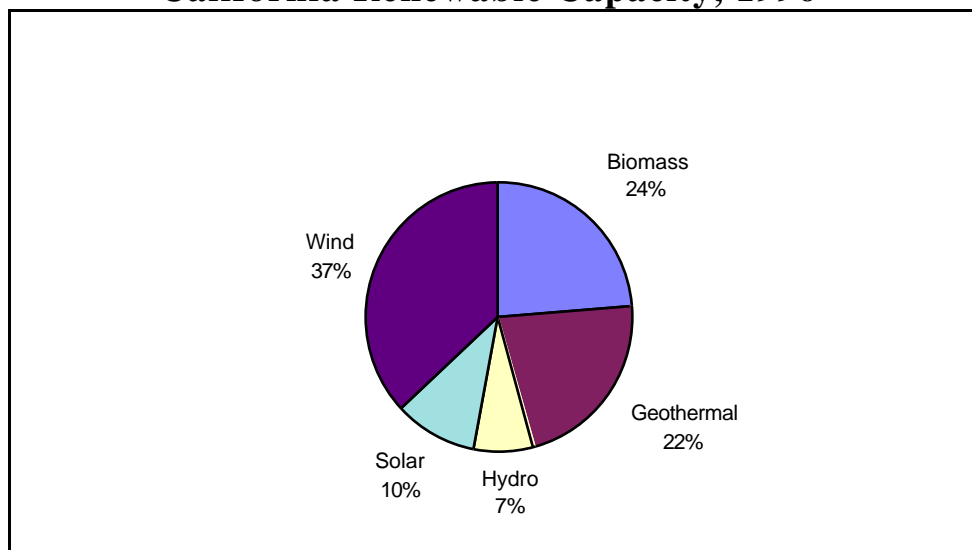
Summary of California Renewables Industry

Over the last decade and a half, California has developed the largest and most diverse renewable generation industry in the world. The development of this industry was spurred by the Federal Public Utility Regulatory Policies Act of 1978 (PURPA), which authorized State regulations to accelerate the development of cogeneration and renewable generation by non-utility suppliers. PURPA in California was implemented through four types of standard offers (SOs), called: SO#1, SO#2, SO#3 and I(interim)SO#4.

Most renewables in California have been built under ISO#4 contracts, since these contracts provided fixed energy payments for 10 years, representing a guaranteed revenue stream that was

attractive to project financiers.² Figure I-1 shows the percentages each technology represents of the total 3911 MW of installed renewable contracts existing in California in 1996, by technology.

Figure I-1
California Renewable Capacity, 1996*



* Does not include utility-owned renewable generation capacity.

The “price cliff” for the ISO#4 contracts occurs in the 11th year of the contract, when the fixed energy prices convert to variable SO#1 prices. This currently represents a drop of about 85% because the fixed energy prices were developed based upon price forecasts prior to the collapse of oil prices in late 1985 and early 1986, and current energy prices are significantly below these forecasts. Nearly half of the renewable projects will be past the fixed energy price portion of their contracts by 1998, and nearly all will be by 2002. Table I-1 shows the amount of renewable capacity by technology that is not receiving above-market fixed energy payments in the transition period. This aspect of renewable contracts is a prime determinant of eligibility for AB 1890 funding support in the Staff proposal.

Table I-1
Renewable Contracts Out of the SO4 Fixed Price Period*

Fuel Type	MW Capacity	1998		1999		2000		2001		2002	
		MW	Percent of Total	MW	Percent of Total	MW	Percent of Total	MW	Percent of Total	MW	Percent of Total
Biomass	925	470	51%	530	57%	799	86%	868	94%	870	94%
Geothermal	851	314	37%	604	71%	780	92%	814	96%	814	96%
Hydro	291	199	68%	203	70%	235	81%	278	96%	280	96%
Solar	386	302	78%	368	95%	368	95%	386	100%	386	100%
Wind	1459	1070	73%	1220	84%	1305	89%	1419	97%	1459	100%
Totals	3911	2356	60%	2926	75%	3487	89%	3764	96%	3809	97%

² ISO#4 and SO#2 were suspended (no longer available for new contracts) by the end of 1986.

*Includes all utility contracts and excludes utility-owned generation capacity.

Guiding Policy Objectives

Staff's proposal is guided by broad policy objectives with an overall goal *to maximize the effectiveness of the AB 1890 renewable funds*. Staff's proposal maximizes fund effectiveness by including distribution mechanisms and eligibility criteria that will minimize administrative costs, allow the market to naturally weed-out projects that are unlikely to be competitive and reward those that are already competitive, and encourage renewable suppliers to improve operations and technology and make the industry more competitive. AB 1890 requires consideration of 'market-based approaches,' of rewarding the 'most cost-effective' resources, and of the use of 'financing and other mechanisms to maximize the effectiveness of available funds.'

Effectiveness is measured by accomplishment of three broad policy objectives, derived from language in AB-1890 and subsequent proposals and comments:

- 1) maintaining the benefits and diversity of the renewables industry in a competitive electricity industry;
- 2) encouraging the development of new renewable resources and the advancement of new and emerging renewable technologies that show reasonable potential to become cost-competitive; and
- 3) facilitating the development a self-sustaining customer-driven renewables market in the State.

Maintaining Benefits

Staff's proposal maintains the benefits of the renewables industry effectively by supporting the existing renewables industry, commensurate with needs and available funds, while encouraging the commercialization of newer renewables and allocating no funds to industries that will likely be competitive even without a temporary subsidy. Staff's proposal allocates sufficient funds to remaining industries to meet the needs of projects that show promise of becoming competitive.

Encouraging The Development of Markets for Renewables

There are a variety of market mechanisms that are relevant for the different renewable energy technologies. Currently, most existing renewable electricity is delivered to utilities, and thereby to consumers, under standard-offer contracts. This arrangement seems more appropriate to the monopoly provider oriented electricity industry that California is moving away from than the market-driven industry envisioned in AB-1890. However, it is likely that this portion of the renewables market will remain important through the industry transition and perhaps beyond.

It is also possible that long-term contracts directly with end-use customers or their representatives will be a desirable or even necessary component of the envisioned direct access market. Mechanisms to move existing long-term contracts with utilities and to develop new contracts in the direct access market may be needed to encourage significant development of a customer-driven renewables market. These contracts could allow customers and their representatives to express their preferences for renewably generated electricity and to protect against risks that may develop in the market for conventionally generated electricity.

Competitive renewable generators can be full and equal participants in the conventional generation market being established in California through the power exchange. Projects that can bid competitively with conventionally generated electricity can and should be encouraged to participate to the fullest extent in the power exchange, taking part in the development of the competitive electricity market in California.

The development of a vibrant consumer-driven market for renewable electricity will be slowed by the obligation, and the security, represented by the long-term standard offer contracts with utilities. The attraction of certain fixed long term capacity prices combined with the deterrence of high penalties for premature termination make it very unlikely that a significant level of QF capacity will be freed up to compete in the open market unless action is taken to deal with this issue.

Finally, there are two types of renewable generation that operate in, or are affected by, markets other than the wholesale electricity marketplace. The first is renewable generators that intend to sell their product in the electricity market, but buy their feedstock or fuel in the markets associated with waste products in California. Regulatory and market conditions associated with waste products can determine how much these generators pay for their fuel (or are paid for the benefits associated with removing waste). The second is the market for distributed generation of electricity on the customer side of the meter, which will compete with the retail price of electricity, rather than the wholesale price that will be established by the PX. Staff believe that it is important to consider encouraging the development of an infrastructure that will support all of these markets. Staff's proposal in this report encourages the development of a renewables marketing infrastructure by allocating some funds to consumer-based direct access markets in the form of consumer rebates for consumption of electricity from renewables, and also consumer education and market research.. Staff's proposal also encourages renewable competition in the retail sector through financial incentives to support increased penetration of distributed emerging renewable technologies.

General Issues Needing Legislative Guidance

Several general issues other than specific allocation, distribution mechanism, and certification protocol decisions are raised by AB 1890 and this report. Many of these issues cannot be resolved without further public input and eventual legislative guidance.

Program Administration. The legislature has selected the Energy Commission to provide this report containing recommendations concerning the allocation and administration of AB 1890 funds. Staff recommends that the renewables funds be administered by the Energy Commission using the Commission's regular budgetary process, *allocating no funds from AB 1890 for this purpose*. The Commission would collaborate, where necessary and appropriate, with other administrative organizations, such as the California Alternative Energy and Advanced Transportation Finance Authority (CAEATFA) or the California Housing and Finance Authority (CHFA).

Activities Beyond the Collection Period. AB 1890 requires funds to be collected between 1998 and early 2002 for renewable support, but does not indicate what should happen to funds that may not be allocated by the end of that period. Some distribution mechanisms intended to maximize fund effectiveness, such as a variety of financing mechanisms, imply that funds will return to a loan account well beyond the transition period. In addition, some funds may be held temporarily as a result of the Staff's proposed eligibility criteria or 'rain check' provision for production incentives. This implies a need for continuing administrative activity beyond the transition period. Staff believes that there are continuing public policy benefits and commensurate actions beyond

the transition period that should be considered in further legislative direction. For example, Staff believes that there will continue to be a variety of emerging renewable technologies beyond the transition period, which could be supported through reinvestments in a revolving loan fund.

Interrelation With Other Forums. Staff's proposed renewable consumer education and market research activities (2% of AB 1890 funds) should be interrelated with the general consumer education and protection measures called for in AB 1890 and the ongoing proceedings on these matters at the CPUC, to prevent confusion among consumers and potential duplication of activities. In addition, the CPUC's proceedings covering QF contract restructurings and the effects of these contracts on CTC recovery should account for and be accounted within legislative direction about the initial allocations of and the ongoing administration of AB 1890 renewables funds.

In-State Expenditures of Renewable Funds. Further legal direction is being sought about the legal issues, if any, that are raised by providing support to renewables located in California, but not to those engaged in electricity commerce in California, but located outside the State.

Report Organization

This report is organized into an Executive Summary and six primary chapters. The Executive Summary provides the reader with an overview of the policy guidelines considered in the report and of Staff's proposed 1) allocation of AB 1890 funds, 2) distribution mechanisms for disbursing funds to individual projects, and 3) certification protocols for renewable projects and providers. Chapter I is this Introduction, providing background information, description of policy guidelines, and a list of continuing issues to be addressed. Chapter II provides details of the allocation proposed by Staff; Chapter III provides details of the distribution mechanisms proposed; Chapter IV discusses the certification protocols proposed; Chapter V describes staff's proposed findings relating to microgeneration, VOC generation and fuel cells; and Chapter VI lists Staff's proposed definitions.

II. ALLOCATION OF FUNDS

Overview and Rationale

The development of this proposal involved the review of all filings and presentations from participants in the November and December Energy Commission workshops. Staff also considered the input of Energy Commission staff and consultants who are knowledgeable about the various technologies and funding mechanisms proposed. In deriving the allocations in this proposal, Staff applied the policy objectives listed in Chapter I to the extent possible given the available information about industry needs.

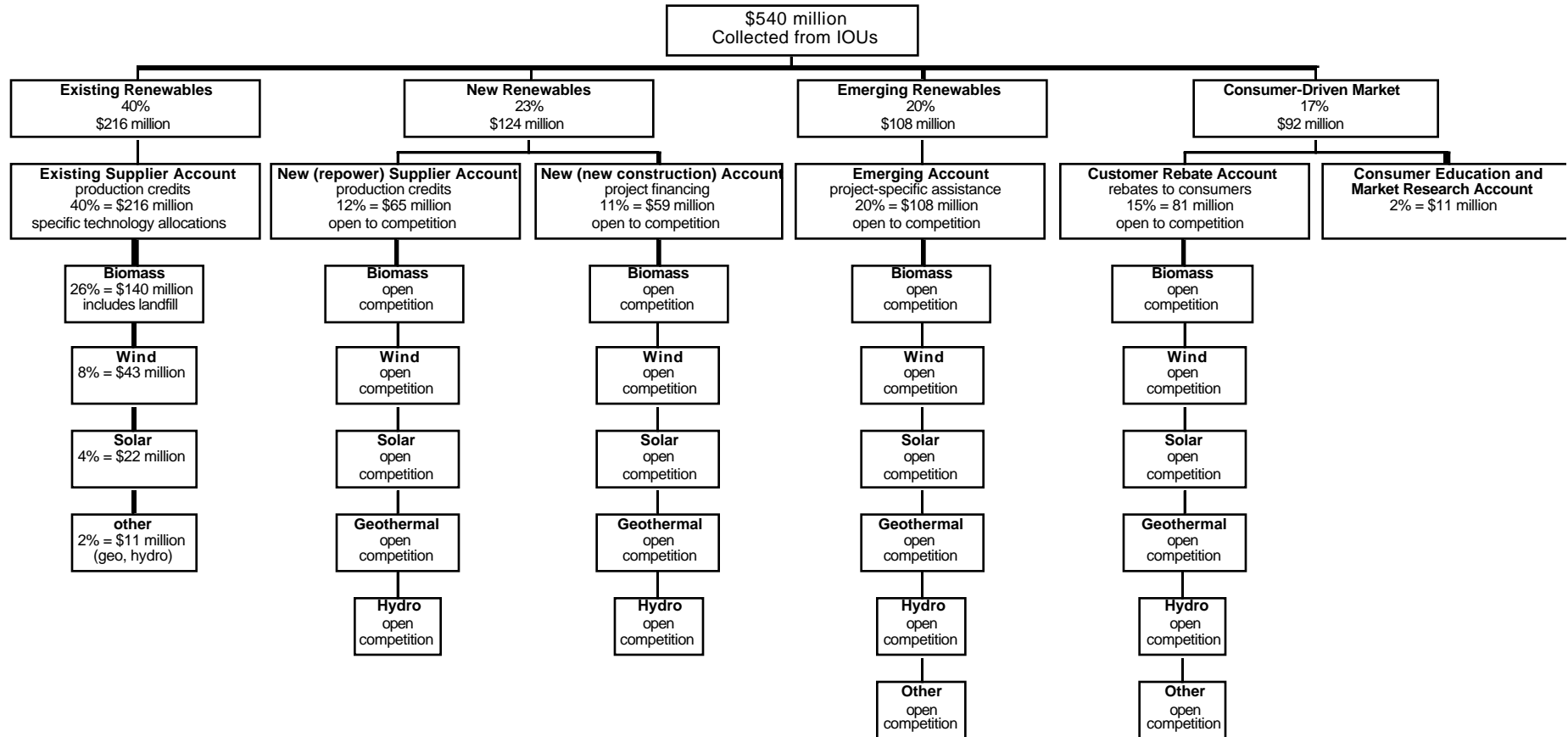
Existing/New/Emerging Allocation

Staff's proposed allocation of renewables funds is summarized in Figure II-1 and in Table II-1. The draft proposal allocates 40 percent of the funds specifically to existing renewables, and 43 percent for new and emerging renewables, falling within the parameters established in the legislation. Of this, new technologies are allocated 23 percent of the funds (12 percent for repowered projects and 11 percent for new project financing) and emerging technologies are allocated 20 percent of the funds. The remaining 17 percent of the funds are used for the development of a customer-driven renewables market and for consumer information and market research. Fifteen percent of these consumer funds are available to assist the direct access marketing of existing, new or emerging technologies through customer incentives and the other 2 percent of the funds are reserved for public education about renewables markets and for market research.

Table II-1
AB-1890 Allocation Accounts

Account	1998	1999	2000	2001
Existing Supplier-Side	40%	40%	40%	40%
Open Consumer	15%	15%	15%	15%
New Supplier-Side	12%	12%	12%	12%
New/Emerging Financing	15%	15%	15%	15%
Emerging	16%	16%	16%	16%
Marketing	2%	2%	2%	2%

Figure II-1
Staff Draft Proposal for AB 1890 Renewables Funding Allocation



Supplier/Consumer Allocation

The proposal provides incentives and support mechanisms directed at both the suppliers of renewable energy and the consumers or marketers of such energy. Staff recognize that the future of renewable energy may lie with the rapid development of a strong consumer base for renewable power. Unfortunately, such a market does not currently exist, and much time will be required to test and develop this market if it is to reliably support the renewables industry. Staff realize that many existing suppliers are in immediate need of financial assistance and cannot rely entirely on the rapid development of a steady or sizable customer-driven market for support.

Nevertheless, from a strategic perspective, the proposal must encourage the development of a customer-driven market for renewables. This goal may be hindered by the fact that the vast majority of existing renewables are obligated to sell their output under Standard Offer contracts that will continue to deliver fixed capacity payments for the next 15 to 20 years. Staff recommend a provision for contract restructuring that will encourage, but not compel, existing suppliers to negotiate favorable restructured contracts with utilities. If these restructured contracts compensate suppliers for the full opportunity cost of leaving their contracts (i.e., capacity payments plus any applicable penalties), the suppliers should theoretically be indifferent.

After considering a number of supplier and consumer-side allocation options, Staff propose to reserve funding for the development of a customer-driven market without putting the fate of the existing renewables industry wholly in the hands of consumers. This proposal therefore: 1) calls for provisions to encourage Standard Offer Contract restructuring, 2) allocates a portion of the funds for the development of a customer-driven market (through customer rebates), and 3) allocates the remaining 83 percent of the AB 1890 funds for direct assistance to suppliers.

Public Education and Market Research

It is an axiom of economics that an efficiently-functioning marketplace requires information sufficient to enable consumers to make well-informed choices. This may be even more important for renewable energy than for many other goods and services, because electricity is unseen, intangible, and electricity service is taken for granted until an outage makes it entirely unavailable. Information is also critically important for the promotion of renewable energy because consumers are not accustomed to making choices about electricity supplier.

Opinion polls and other market research over the last 20 years indicate that consumers are interested in and support renewable energy, yet we should not assume that consumers will rush to buy "renewable" electricity when given the choice. Consumers will likely be wary of the direct access market in general, because it represents a change in the status quo and because of concerns about cost and reliability when purchasing energy from less established or familiar companies. Consumers can be expected to be skeptical of marketing claims, and to feel confused about the workings of the system or of the choices available to them. Renewable energy marketers are likely to face an even larger barrier, because consumers will not immediately understand the differences between energy types or the benefits of renewable energy relative to its cost. Even with the competitive information available in the marketplace, consumers may still hesitate because of confusion about competing advertising claims. For instance, they may be uncertain about which electricity technologies are more environmentally beneficial or about which energy sources are actually renewable.

Furthermore, consumers typically require *repeated* exposure to information before it sinks in. Major advertisers are well aware of this need, and this is why one sees the same commercials run over and over again on television. The burden for educating the public about renewable energy choices cannot rest solely on the shoulders of renewable energy marketers because these

companies will not share proprietary marketing information or fund generic marketing studies. Clearly, there is a need for a central, unbiased, and consumer-friendly source of information about renewable energy choices. Accordingly, the Staff proposal includes a two percent allocation to a generic public education and market research fund, details of which will be developed. Staff invite comment regarding the exact types of activities that should be supported with these funds.

Adjustment Mechanisms

The allocations in this proposal to specific technologies, and even across technology status categories, should not be set in stone over the four year funding period. Staff recognize that the status of technologies may change, requiring adjustments in the allocation scheme to maximize the effectiveness of remaining funds. Funds that are committed to a specific project will not be reduced, unless they are also tied to performance milestones, but it may be appropriate to move funds that are not yet committed to other accounts that can make better use of the money. Staff recommend the development of mechanisms that will automatically trigger this re-allocation of funds, if necessary, at a later date. The details of such a trigger mechanism have not yet been developed.

Description of Renewables Accounts and Eligibility Requirements

According to this proposal, the AB 1890 renewables funding would flow through six "accounts." These funding accounts are designed to meet the funding needs of industry within the goals and objectives of AB 1890. Each technology status category (existing, new, and emerging) is assigned an account (or, in the case of new technologies, two accounts). Two additional accounts, the generic renewables marketing account and the consumer-driven market account, are designed to serve the needs of the industry as a whole and to meet the policy objective of developing a market for renewables.

Allocation Account #1 - Existing Technologies ***(40% = \$216 million)***

This account is designed to help maintain the existing renewable technologies as defined in Chapter V of this report. These funds would be available to all non-utility renewable generators, except those in the fixed price period of their Standard Offer #4 contracts, including those with long-term contracts with utilities, large businesses, or industrial customers. Suppliers are eligible regardless of whether or not they are receiving capacity payments from utility contracts.

Projects eligible for funding from this account meet the definition as an "existing" renewable technology. Projects *excluded* from this funding account would include 1) facilities selling power under the fixed energy portion of a Standard Offer #4 contract and 2) facilities under utility ownership, for which the capital cost has been previously recovered from utility ratepayers and/or will be recovered through the competitive transition charge. In addition, geothermal and small hydro facilities are excluded, except for those facilities that receive an allocation of the "other" funds on a case-by-case basis as determined by the Energy Commission.

Other possible exclusions, on which Staff invites public comment, could include 1) facilities with Standard Offer #2 contracts, or 2) biomass facilities with captive fuel supplies. Staff also invites comment on other exclusions that may be appropriate.

Note that these eligibility requirements do not eliminate *all* projects that 1) do not require assistance or 2) cannot become cost-effective. Technology funding allocations and eligibility requirements eliminate some projects that fall into the first category, while the distribution mechanism options described in Chapter III are designed to "weed out" those in the latter category.

The allocation of funds from this account to specific technologies is shown in Figure II-1.

Allocation Account #2 - New Repowered Technologies ***(12% = \$64.8 million)***

This account holds funds that can be distributed to suppliers of repowered projects. The account is open to any project meeting the definition of a "new technology" as defined in Chapter V. Projects eligible for funding from this account must also meet the Staff's proposed definition of a repowered facility based on the IRS guidelines, which require that the fair market value of the refurbished portion of the facility must be at least 80 percent of the refurbished facility's total value (the cost of the new improvements plus the value of the used property).³ Projects receiving funds from the repower account would not be eligible for other financing assistance from the "new" account.

Allocation Account #3 - New Technologies ***(11% = \$59 million)***

The financing account for new renewables (new construction as opposed to repowered facilities) is designed to provide projects with low cost financing through a combination of loan guarantees and interest rate buy-downs, or for tax-exempt financing in the limited cases where federal law will permit this for energy projects.

³ Staff expects that the wind industry will claim most if not all of these funds because they are the only industry who currently has extensive plans to repower existing facilities.

This account is open to all new technologies as defined in Chapter V of this report in order to facilitate the best new projects without technology constraints. Funds will be awarded to individual projects that 1) meet the eligibility requirements, 2) submit a proposal, and 3) meet specific approval criteria.⁴ These funds would not be available to finance repowering. Staff proposes that the Energy Commission develop the details of how this program would be implemented and administered.

The nature of a revolving loan account implies that funds will continue to be paid out after the transition period and that funds will eventually return to the account. Staff proposes that the Energy Commission seek legislative guidance regarding how funds that are returned to the account should be utilized after the transition period. Funds that are uncommitted at the end of the transition, or funds that are returned at a later date as loan guarantees are freed-up, may be used for other new renewable projects or be reallocated for use in the consumer-credit account, the public education/market research account, or the existing renewables supplier account.

Allocation Account #4 - Emerging Technologies (20% = \$108 million)

This account is an open account designed to meet the varied needs of emerging renewables as defined in Chapter V. The account may be used for supplier or consumer financing or for rebates to customers for purchases of distributed generation hardware (all of which were specifically requested by some industries), or other purposes as requested and approved. The funds will be allocated to projects based on evaluations of submitted proposals, the details of which have not yet been determined. No single specific technology will be eligible to receive more than 60 percent of the funds in any of the four solicitation periods. Staff proposes that photovoltaics, which are specifically mentioned in AB 1890, be supported by a specified but as yet undetermined portion of funds from this account up to the proposed 60 percent maximum.

Projects receiving these funds will be monitored for progress, and projects that do not meet their specified milestones may lose their funding. Funds from this account that are uncommitted at the end of the fundraising period, or funds that become freed-up at a later date, should be rolled-over to support emerging technologies in the following year. If the emerging account continues to be under-subscribed from year to year, funds may become available for ongoing support of emerging technologies depending upon the Legislature's direction in this matter. Staff also defers to the Legislature for guidance about how to use any funds that are returned to the account from revolving loans after the transition period.

Staff propose that projects eligible for funding from this account meet the definition as an "emerging" renewable technology, plus the following criteria:

- The technology must be commercially available with at least one vendor offering equipment utilizing the technology for sale in California, along with a five year warranty on performance.
- The technology must show at least one year of demonstrated reliable, predictable and safe performance by a full-scale facility utilizing this technology under field conditions.
- The technology must be designed to produce grid-connected electricity, since remote applications are generally cost effective and do not require financial assistance.

⁴ Staff expects that geothermal projects will claim most, if not all of these funds because that industry appears to have the greatest interest in new project development.

- The project must be designed primarily for purposes of producing electricity for use or sale, rather than to produce research data.

Allocation Account #5 - Consumer Incentives
(15% = \$81 million)

This account is designed to help build a customer-driven market for renewables. This account will hold money to be used as customer rebates, designed to encourage: 1) customer participation in the renewables market; 2) direct access marketing by renewables; and 3) a role for aggregators and marketers of renewable power. The customer rebates are awarded only for transactions that occur in the direct access market, and can apply to customer purchases from existing, new, or emerging renewables. More information about how funds from this account are distributed in Staff's proposal can be found in Chapter III.

Allocation Account #6 - Consumer Information And Market Research ***(2% = \$10.8 million)***

This account would be used for one or more of the following: public education about renewable power and the benefits thereof, the coordination with the US Department of Energy on the development of a "power content label" for all providers of energy, and market research. The power content label, a concept generally favored by the renewables industry, would be used to provide simple and easy-to-understand information to consumers about the power content of all providers, focusing on the percentage of "green" or renewable power.

The two percent allocation to this account would not be sufficient for a widespread public media campaign, but would be enough to cover the development and dissemination of packaged consumer information pieces. A market research function would require additional funding, as would any campaign that required extensive use of television, billboards, or radio.

Allocation of Funds By Technology

Biomass

The biomass industry requested 30% of the total funds to support all currently operating plants and to return eleven mothballed plants to operation. The industry requested no funds for new or emerging biomass and 1% for specified biomass market research. The Staff proposal would reduce the allocation for existing biomass to 26% and include landfill gas projects. This level of support should keep most biomass plants in operation during the transition period until 2002. However, since the ability of current biomass plants to be cost-effective post 2002 appears to critically hinge on the ability to shift the cost of fuel collection and processing to non-electricity sectors, the Staff proposal would link the funding of biomass projects to plans for shifting these fuel costs. This outcome will hinge on the findings of the CalEPA in its report to the legislature. Without this link to progress, biomass facilities may be no closer to becoming competitive at the end of the funding period than they are now, a reality which would conflict with the triage rationale used by Staff in determining the proposed allocation. Staff propose a reevaluation of the funding allocation to the biomass industry in the event that the CalEPA study does not favor shifting biomass fuel costs. In addition, some portion of the funding for biomass may include a requirement to make plant improvements, thus encouraging the implementation of newer technologies.

Biomass would also be eligible for consumer credits for both existing and new biomass plants. Biomass facilities already off their utility contracts or with surplus-type contracts will be able to make immediate use of the consumer credits if they deliver their energy to direct access consumers (as opposed to the pool); other existing biomass plants will also be eligible for consumer credits if they accept the proposed contract buy-out incentives.

Wind

The wind industry originally asked for a production incentive, which it expected would result in an allocation of 9% for existing wind and 14% for new wind generators (later the industry proposed that they receive 14% for existing and 9% for new wind projects). The industry defined "new" wind to include substantial retrofits and repowers of existing turbines, as these would qualify under IRS definitions as new generation and, therefore, receive federal production incentives to assist in their financing. Wind is unique in that, unlike large central station technologies, the best way to reduce high operation and maintenance costs on older turbines is to largely or completely replace them with new equipment via the retrofitting or repowering. Consequently, such retrofits and repowers represent replacement of existing capacity with new equipment of higher efficiency, better design, and lower future operation and maintenance costs.

It is important to encourage the maximum amount of such repowers and retrofits, not only because they can receive the additional leverage of the federal production incentives for new wind, but also because this will create a more cost-competitive wind industry. Therefore, Staff propose to maintain the original wind industry allocation of 60% of funds for repowered projects and 40% for existing generators. Consequently, Staff's proposal allocates 8% of the funds for production incentives to support existing wind, and 12% to repowered new projects open to competition among all technologies (Staff expect that wind will capture all or most of this). In addition, the wind industry is eligible for an allocation of customer credits through the customer-driven market account for projects that compete in the direct access market. Finally, although wind proposed no new or emerging projects, these projects if they existed would be eligible for support through the new or emerging project financing accounts.

Solar

Solar Thermal: Existing solar thermal technologies are represented by the nine parabolic trough solar electric generating systems (SEGS). These units comprise 354 MW of capacity and historically have produced approximately 600 GWh/yr or about 3.3% of QF renewable electricity in California. While these units are important as the main existing source of solar generated electricity, they represent only one of several solar technologies of the future. Staff considers the solar thermal industry's request for \$54 million, or 10% of total funds, to be too high given the output of these existing facilities and the belief that new parabolic trough construction in the foreseeable future is unlikely. Further, Staff question the benefit of continuing to support the early SEGS units which, even if modified and improved as proposed using these funds, still represent an older and less cost-effective technology. Finally, Staff are concerned about the equity of providing funds to the newest SEGS units, which requested 40% of the SEGS allocation and which were built with the variable and uncertain electricity prices of the Standard Offer #2 contracts. These generators made business decisions based on low and uncertain gas prices, and these market conditions remain largely unchanged. The decision to support or exclude Standard Offer #2 contracts (of late vintage) from funding is still under consideration.

The Staff proposal reduces this allocation to 4% or \$22 million. Compared to the proposed biomass allocation, which is the other existing technology specifically singled out for support in AB 1890, this \$22 million would still give slightly higher support per kWh for solar thermal technologies. In any event, all SEGS units would be eligible to move towards selling power to the direct access markets and receive assistance through the consumer credit program.

While the SEGS units requested that their allocation be given in the form of cash grants, Staff propose that SEGS receive production credits, including a rain check provision, like the other technologies. SEGS representatives argued for cash grants in lieu of production credits on the basis that they must take their facilities off line for long periods of time in order to make routine

modifications and repairs, and that this would force them to lose out on any production incentive during this period. The rain check option would allow facilities to shut down for legitimate repairs and modifications and have the foregone production incentives held by the Energy Commission and awarded to such plants later for an equivalent amount of generation, immediately after the expiration of the program period. In this manner, all incentives to existing plants would be based on actual generation of electricity.

Photovoltaics: The photovoltaics industry requested funding in the form of customer "instant rebates" low-interest customer loans, a consumer quality assurance program, and green marketing. The latter two requests are generally met through the Staff proposal's broad allocation to the consumer education and market research account. The remaining \$90 million requested by the photovoltaics industry would be used for customer rebates and low interest loans for the purchase of PV systems. This funding request is in excess of the 60 percent cap for any single technology in the emerging category, which would initially limit photovoltaics to a maximum of \$65 million in assistance. Like all other industries that have submitted funding proposals, the photovoltaics industry will likely not receive the full amount of their request. However, AB 1890 specifically identifies photovoltaics as an emerging technology and the industry must receive an as yet to be determined share of the emerging funds.

Like other renewable projects, certainty of power purchase contracts and firm prices make the projects happen. For projects to be financed, the project must be of some minimum size to be cost effective. Similarly, an assured market at a certain price is what drives the marketing and production efforts for PV plants. The photovoltaic industry maintains that price supports (buy-downs) are essential for accelerating the commercialization of PV in California. The industry will likely receive funds for this purpose, but the minimum amount appropriated to photovoltaics has not yet been determined. As with all appropriations from the emerging account, AB 1890 funds appropriated to the photovoltaics industry should be conditioned on the industry meeting certain milestones. The next phase of funds would be released only after the industry has shown that it has met the cost conditions of the previous phase.

The consumer financing component is also essential for the photovoltaics industry. Like all other renewables, the financing costs are onerous for the purchase of systems, yet fortunately PV technology lends it self well to bond financing and private sector financing once the private sector is convinced of its viability. Thus, the entire requested amount of \$24 million of consumer financing need not come from AB 1890. Some portion of the AB 1890 emerging account funds could provide for a seed fund. In addition, the consumer should be required to put up 10% down payment (for a 3 kW system, this cost will be less than \$1,000 after the buy-down). This commitment of 10% on the part of the customer is a good business practice because it helps ensure that the customer feels a sense of ownership and properly maintains the system.

Dish Stirling and Solar Central Receiver: These technologies will be evaluated as possible candidates for emerging status and for funding from the emerging account.

Geothermal

Based on Staff's knowledge of and work with the geothermal industry, it is the Staff's opinion that the existing industry requires little if any assistance to become competitive. In addition, it appears that certain facilities in need of support will not be able to lower operating costs with additional funding. Applying the triage principle, Staff proposes that the geothermal industry receive no earmarked funds from the existing category. The industry would, however, be eligible to compete for the two percent allocation to "other" technologies and for funds earmarked for the consumer side of the market. Geothermal projects are expected to be strong competitors in these "open" categories.

For new facilities, the geothermal industry indicated a need for either long-term purchase agreements or assistance in obtaining financing and reducing the cost of such financing. Their first request is dealt with in our proposed consumer credit program, in which we would expect geothermal to be a major competitor for these funds because of their relatively low generation cost. The industry's second request is covered in the Staff proposal through the financing assistance account. Although this account is open to competition, Staff expect that geothermal will be a strong competitor for this source of funding. Staff are presently exploring several means for leveraging funds from the renewable funds to provide financing for new or emerging generation or to assist project developers to obtain acceptable financing from other sources.

Small Hydro

Staff expects most hydro facilities to have little or no need for assistance, though operating costs of existing units do vary widely. In order to account for facilities that may require funding, existing hydro is eligible to compete for the two percent of funds allocated to "other" technologies. Hydro is also able to access customer credits through the direct access market, is eligible for financial assistance for any new technologies, and may even submit proposals for funding to any emerging hydro technologies.

III. DISTRIBUTION MECHANISMS

Overview and Rationale

Since the economic needs of the renewables industry vary substantially between existing, new, and emerging technologies and between suppliers and consumers, a “one size fits all” approach for the distribution of the renewables funds will not provide the best means to develop a self-sustaining renewable industry in California. Instead, Energy Commission Staff propose the use of five separate distribution mechanisms for the renewables funds, each crafted to meet the specific needs of the various industry segments.

A primary consideration in the development of the distribution mechanisms outlined here was the recommendations of various industry representatives who participated in the Energy Commission’s extensive information gathering proceedings. These market participants have the best understanding of what is needed to improve their standing in the restructured electricity market. A second key consideration was the simplicity of the distribution mechanisms. Yet another consideration in the selection of the proposed distribution mechanisms was their flexibility. As the renewables industry moves through the transition period there will certainly be unexpected developments within fuel or technology types or in the categories of existing, new and emerging technologies. The distribution mechanisms should either automatically account for these changes or else they should include pre-determined adjustment safeguards that will prevent gross overpayment or underpayment in any particular category. The distribution mechanisms are summarized in Table III-1.

Table III-1
Summary of Eligibility Requirements/Exclusions
For Funding and Distribution Mechanisms, by Account

Account Name	Distribution Mechanism	Eligibility Criteria	Exclusions
Existing Technologies Account	Per kWh production incentive <ul style="list-style-type: none"> • amount varies, determined quarterly • suggested caps vary by technology 	<ul style="list-style-type: none"> • meets definition as an "existing" renewable technology 	<ul style="list-style-type: none"> • facilities w/ fixed energy payment contracts • facilities under utility ownership • facilities with SO2 contracts dated post gas price collapse
New (Repower) Account	Per kWh production incentive <ul style="list-style-type: none"> • amount varies, determined quarterly • suggested caps vary by technology 	<ul style="list-style-type: none"> • meets definition as a "new" renewable technology • refurbished portion of facility is at least 80% of new facility's total value 	<ul style="list-style-type: none"> • project must not have received financial assistance through the new (new construction) account
New (New Construction) Account	Project financing assistance • includes loan guarantees & interest rate buy-downs	<ul style="list-style-type: none"> • meets definition as a "new" renewable technology • completely new construction (not a repower) 	
Emerging Technologies Account	As needed, on a project-by-project basis <ul style="list-style-type: none"> • includes loan guarantees, interest rate buy-downs, customer purchase rebates, and other forms of assistance 	<ul style="list-style-type: none"> • technology must be commercially available, w/ at least 1 vendor offering equipment for sale in CA • minimum 1 year of available performance data from full-scale facility • must be a grid-connected technology • new electricity generating process (not an incremental improvement to existing technology) • must be a project designed to produce electricity (not a data-gathering project) 	
Customer Rebate Account	Customer rebates for renewable power purchases <ul style="list-style-type: none"> • rebates awarded to customers through power purchases 	<ul style="list-style-type: none"> • credits awarded only to consumers of certified renewable power, purchased through the direct access market 	
Consumer Information & Market Research Account	N/A	N/A	

Distribution Mechanism #1 - Per KWh Production Incentive (Existing Technologies)

Description: The first proposed distribution mechanism is a simple production incentive. The level would be determined by dividing the available funds in a payment period by the total kWh of certified renewable electricity produced in a corresponding qualification period. For example, if \$7 million dollars were available for electricity generated by certified biomass suppliers at the end of a quarterly payment period and if 700 GWh of electricity were generated by certified biomass suppliers during the qualifying period, then the per kWh payment to each supplier would be \$7 million/700 million kWh = \$.01 per kWh.

Staff are currently considering alternative distribution mechanisms that would better incorporate the triage principle described earlier in this report or that would automatically adjust for changes in market conditions. One possible distribution mechanism would simply provide a fixed payment level in \$/kWh to suppliers based on targeted technology costs. This mechanism, if adopted, would require adjustment safeguards for over-subscription and/or under-subscription to the payment fund. Another possible mechanism would pay suppliers based on the difference between a pre-determined target generation price and short run avoided costs (SRAC) or the market clearing price (e.g., target generation price - market price = payment). Staff are considering a target price level of \$.035/kWh for wind, geothermal and small hydro technologies and \$.05/kWh for biomass and solar thermal technologies. The corresponding upper limit on the production incentive would be \$.01/kWh for wind, geothermal or small hydro plants and \$.015/kWh for existing biomass and solar thermal technologies. Staff welcome public comment about how these or alternative distribution mechanisms might be implemented in a simple, efficient and fair manner.

Applicable Funding Account: The production incentive mechanisms would be funded through the existing technologies account.

Timing: The proposed payment period for the production incentive is quarterly. A one quarter lag between generation qualification and payment of funds would allow sufficient time for collection and verification of reported generation data in order to calculate the proper payment level. This would require that payment for the first quarter of 1998 (January - March) be based upon generation during the last quarter of 1997 (October - December). Payment would be made directly to suppliers at the end of each quarter for 18 successive quarters or until the allocated funds are fully distributed.

Several industry representatives expressed concern that a kWh production incentive paid over a limited period of time would become a disincentive to facilities requiring extended periods of down-time for capital improvements or repairs. Recognizing that a major objective of these investments is to assist renewables in becoming cost-competitive, Staff propose a "rain check" provision that would allow suppliers using any fuel and/or technology type the option to postpone up to two quarters worth of generation over the four and a half year payment period for capital improvements or plant repairs. Plants would then qualify for the missed payments and any interest earned on them in two additional qualifying quarters added at the end of the payment period for a total of 20 possible qualifying and payment periods for the production incentive (18 regular payment periods and 2 rain check periods). The level of rain-check funds held for payment would be predetermined based upon generation by the particular generator during the period immediately prior to the scheduled maintenance outage or during an alternative time period approved by the Energy Commission on a case-by-case basis.

Adjustment Mechanisms: The proposed calculation method for the production incentive would automatically adjust for any increases or decreases in total generation caused by factors such as: an increase in the number of plants out of the fixed price SO4 payment period, the closure of certain plants for maintenance, or other factors. In addition, Staff propose that an upper limit on the

payment level (\$.01/kWh for wind and geothermal plants and \$.015/kWh for biomass and solar thermal plants) be used to protect against excessive payments to any particular supplier.

Distribution Mechanism #2 - Per KWh Production Incentive (New Repowered Technologies)

Description: This distribution mechanism would be identical to the production incentive for existing technologies, but would apply for those repowered facilities that fall into the category of new technologies because the fair market value of the refurbished portion of the facility is equal to or greater than 80 percent of the total value of the facility. The level of payment for repowered technologies receiving the production incentive would be calculated in the same manner as the payment for existing technologies.

Applicable Funding Account: The production incentive mechanism would be funded through the new (repower) technologies account.

Timing: The timing for the repowered production incentives would also be quarterly. This distribution mechanism would also include a rain check provision for up to two quarters worth of generation. Payments would be made for 18 successive quarters, plus an additional two rain check quarters for a total of 20 possible payment periods.

Adjustment Mechanisms: There is a strong probability that the level of generation in the new, repowered category at the beginning of the four year distribution period will be quite small, which would result in excessive payments to a small number of generation facilities. Staff's proposed limits on the production incentive level for repowered plants (\$.01/kWh for wind and any geothermal plants and \$.015/kWh for any biomass or solar thermal plants) will protect against a small number of plants receiving excessive payments.

Distribution Mechanism # 3 - Project Financing Support (New Technologies)

Description: The next proposed distribution mechanism is project financing support for the development of new renewable generating facilities. The funds allocated for supplier-side project financing support would be used for two primary purposes. First, the allocated funds would be used to create a reserve fund that would provide collateral for loans (loan guarantees) for renewable energy projects. Second, the allocated funds would be used to provide interest-rate buy-downs for those same loans. Staff are currently exploring the option of state revenue bonds, which could be issued jointly by the Energy Commission and another appropriate state authority to multiply the financing power of the allocated funds.

Through some combination of loan guarantees and interest rate buy-downs, Staff estimates that as much as 3 to 5 dollars of financing might be leveraged for each dollar allocated to financing assistance. Staff are presently looking at a program which was implemented by the State of Ohio, whereby projects receive financing support using the same base of funds for both loan guarantees and interest rate buy-downs. Using this model, a reserve fund could be used to guarantee loans made by an appropriate party, while the income earned from investing this reserve fund is used to buy-down the interest paid on these same loans. A competitive process is envisioned whereby potential projects would apply to the fund for guarantees and/or interest buy-downs, as needed. Applicants could be selected so as to maximize the amount of renewable capacity or generation for the dollar.

If this proposed distribution mechanism is used, some or most of the of the AB 1890 funds allocated to financing new renewable generation projects will eventually be repaid to the state. Staff

propose that the Energy Commission seek legislative guidance about whether these funds should be re-utilized for additional new project finance support after the four year transition period, whether the funds should be transferred to a different renewables fund and fully distributed, or whether the funds should be returned to ratepayers or reallocated for some other purpose.

Applicable Funding Account: The proposed supplier-side financing mechanism would be funded through the new (new construction) renewable technologies account. Existing generating plants and new repowered plants would not be eligible for the financing support mechanism because those facilities would earn the per kWh production incentive (Distribution Mechanisms #1 and #2). Any central station facilities in the emerging technology category would not be eligible for project finance support using the new technology funds, but they would be able to receive similar or identical project finance support through the flexible emerging technology distribution mechanism (Distribution Mechanism #4).

Timing: Staff propose that four annual solicitations be held by the Energy Commission to determine the distribution of the supplier-side project financing funds. These funds would then be paid to suppliers over a 10 to 15 year period, contingent upon proven electrical generation performance. Staff propose that the Energy Commission seek guidance from the Legislature about whether any awards should be made to develop new renewable projects after funds are allocated as a result of the fourth annual solicitation.

Adjustment Mechanisms: If the demand for the funds does not exceed the supply in any solicitation period, then all projects capable of attaining a complete financing package from outside lending sources should be awarded the requested loan collateral and interest-rate buy-down support. In the event that any solicitation for supplier-side financing support is over-subscribed or under-subscribed it will be necessary to either reallocate or ration the available funds. Staff propose that any unallocated funds from a project solicitation be retained in reserve for allocation in the subsequent distribution period. In the event that the demand for new technology financing support exceeds the supply of funds, then project finance funds should be distributed through a competitive review process managed by the Energy Commission.

Distribution Mechanism # 4 - Project Financing Support (Emerging Technologies)

Description: The next proposed mechanism is not so much a mechanism as a range of possible mechanisms. Emerging technologies each have their own unique needs, and the account for emerging technologies would, according to the Staff proposal, be designed to respond to these needs. An account administrator would evaluate submitted proposals for individual projects and apply a set of criteria that follow the triage principle to determine appropriate levels and types of awarded support.

One possible component of this distribution mechanism would be consumer-side project financing support for the purchase of distributed generation technologies such as photovoltaics. This financing support might include both low interest loans, as well as “instant rebates” that would be used to buy down the capital cost of the technology.

A second component of this distribution mechanism would be very similar to the project financing mechanism used to develop new generating technologies (Distribution Mechanism #3). However, in the emerging technology category, project financing support for central station generating technologies might include capital cost buy-downs in addition to loan guarantees and interest rate buy-downs. Since the development needs of emerging technologies may vary significantly from one project to the next, staff propose that the Energy Commission work with project developers to develop mechanisms that best meet the needs of each technology targeted to receive funding support.

Applicable Funding Account: Any emerging technology selected for funding support would be eligible for this distribution mechanism. Central station generation technologies and distributed generation technologies would receive the types of project financing support that best meet their particular needs.

Timing: Staff propose that the Energy Commission hold four annual competitive solicitations beginning in 1998 to determine the types of emerging technologies that will receive funding support. Although Staff expects that other emerging technologies will continue to need funding beyond the transition period, Staff propose that the Energy Commission seek guidance from the Legislature as to how to utilize any funds that might be repaid to the emerging technology fund.

Adjustment Mechanisms: Staff propose that four annual solicitations be held to determine the level of funds, if any, to be awarded to those technologies identified as emerging. If the demand for the funds exceeds the supply, then the funds would be allocated through a competitive process that considers both the need and the potential of each applicant.

Distribution Mechanism # 5 - Per kWh Customer Rebates (Direct Access Consumers)

Description: The second proposed mechanism is a simple consumption credit for residential and small businesses consumers of electricity from renewable sources. The level would be determined by dividing the available funds in a payment period by the total kWh of certified renewable electric generation consumed through direct access sales in a corresponding qualification period. The payment would be made indirectly to consumers through certified renewable providers, including marketers, aggregators, or those suppliers that elect to sell their generation directly to residential or small business consumers. Generation portfolios with more than 50 percent, but less than 100 percent renewables would be eligible to receive a credit equal to the proportional share of the renewables in the generation mix.

Energy Commission Staff propose that consumption incentives be open across the categories of existing, new and, if applicable, emerging technologies to maximize the flexibility of intermediaries in developing renewables marketing portfolios. Staff are open to comments about alternative consumer incentive distribution mechanisms that might be used in a simple and effective manner to facilitate the development of a robust consumer market for electric power from renewable technologies.

The consumption based credit would be awarded to any residential or small business customers who purchase power from certified renewable providers in the direct access market. This incentive is intended to stimulate the development of a consumer driven market for renewables generation, a market capable of sustaining the renewables industry long after the transition period and after AB 1890 funds are expended. Electricity sold to utilities, large industrial customers or the power exchange would not be eligible to receive the consumption credits.

Applicable Funding Account: The customer rebate would be funded through the consumer incentive account. Any distributed generation technologies, such as photovoltaics, eligible to receive consumer-side financing support would not be eligible for the consumption incentive, because of the difficulty of verifying unmetered on-site consumption.

Timing: The proposed payment period for the consumption incentive is quarterly. A one quarter lag between electricity consumption and payment to consumers through intermediaries or suppliers would allow sufficient time for collection and verification of reported consumption data in order to determine the payment level. Energy Commission Staff propose that the first qualification period

be the second quarter of 1998 (April - June) to provide a reasonable start-up period for the direct access renewables market. Payment would be made directly to suppliers at the end of each quarter for 18 successive quarters or until the allocated consumer funds are completely distributed.

Adjustment Mechanisms: Although the calculation method for the proposed consumption incentive would automatically adjust for any increases or decreases in total renewables electricity consumption, the direct access market will probably be quite small during the early payment periods, which would result in excessive consumer rebate payments to certified renewable providers with little proven performance in acquiring customers. Energy Commission Staff propose that an upper limit of \$.015/kWh be placed on the consumption credit to prevent overpayment of funds at the beginning of the direct access period. Towards the end of the proposed four year distribution period there is a possibility that the consumption credit will be small or negligible on a cents/kWh basis. If the direct access market for renewables thrives as desired, rebate payments to certified providers will still be significant, even if the per kWh credit level is very low.

For example, if the size of the direct access market for renewables grows to 1000 MW towards the end of the payment period, then the average quarterly consumer incentive payment would only be about \$.0025/kWh, which is almost insignificant on a per customer basis.⁵ However, if these 1000 MW of contracts were serviced by 10 certified renewable providers, then the average payment to each provider would be \$450,000. Even 20 competing certified providers, each providing about 50 MW of contracts, would receive a quarterly payment of \$225,000 for their work in developing the consumer driven market for renewables. As this example demonstrates, the payment level to certified providers would be significant, even at very low \$/kWh consumer incentive levels.

⁵ This estimate is based on an assumption of an 80% average capacity factor and a 91 day quarterly payment period.

IV. CERTIFICATION OF RENEWABLE SUPPLIERS AND PROVIDERS

Overview and Rationale

Section 365 (b)(2) of AB 1890 states that customers purchasing at least half their load from certified renewable resource providers shall be eligible for direct access irrespective of any phase-in (except for consumers served by municipal utilities). Section 383(b)(2) states that the recommended market-based mechanisms to allocate funds should include options and implementation mechanisms that implement a process for certifying eligible renewable resource providers.

This AB 1890 language requires a definition of an “eligible renewable resource provider” (along with the basic definitions of new, existing, and emerging renewable resources). It also raises the potential for two types of certification: one for direct access eligibility and one applicable for allocating AB 1890 renewables funds.

Proposed Certification Process

Staff propose that certification be based upon the definitions of renewable resource categories in AB 1890 and this report. The proposed certification mechanism would include both suppliers and providers of that electricity from renewable technologies. Renewable resource providers (including marketers, aggregators or suppliers who sell directly to end-use consumers) would register with the CPUC to obtain eligibility for accelerated direct access. Staff propose that in addition, both renewable resource suppliers and renewable resource providers be required to certify with the California Energy Commission. Quarterly reporting by both suppliers and providers would then be used to determine eligibility for payment of AB 1890 funds. Staff support the concept of assigning a unique supplier identification number to each certified supplier and provider to help maintain project confidentiality.

Staff propose that renewable resource suppliers wishing to be certified and receive a supplier identification number file a standardized self-certification form including the following information:

- 1) Name and location of project;
- 2) Name, address, telephone and telefax numbers of project contact person;
- 3) Description of technology used for power generation;
- 4) Size of project (nameplate) and capacity of interconnection to grid;
- 5) Operational date of project (including dates of additions such as repowering); and
- 6) Type of contract with utility (if applicable) and if SO4, whether project is still in fixed price portion of contract.

Renewable resource suppliers using a hybrid renewable/fossil fueled technology would also declare (subject to verification by the Energy Commission) the amount of fossil fuel used in generation. As described in the definition of renewable resource technologies, any generation from a facility using less than 25 percent fossil fuel is currently, and would continue to be, considered 100 percent renewable generation.

Renewable resource providers interested in marketing/brokering power to customers wanting accelerated direct access must register their intent at the time they register as a retail provider with

the CPUC. Staff propose that renewable providers also register with the California Energy Commission to receive a provider identification number by submitting the following information:

- 1) Name and business address, telephone and telefax numbers of company;
- 2) Contact person responsible for retail sales;
- 3) Description of supply portfolio(s);
- 4) Proportion of power obtained from certified renewable sources;
- 5) List of supplier identification numbers for certified renewable sources;
- 6) Estimate of amount of energy to be purchased from certified renewable sources; and
- 7) Estimated amount of customer demand (in kWhs).

Staff propose that both suppliers and providers file an quarterly report showing the amount of electricity purchased or sold (listed by identification number) The Energy Commission would then use this information to calculate the level of payment to be made to those suppliers and providers. The information from the quarterly filings of the providers and suppliers would be examined to ensure that 1) output from a particular supplier has not been claimed more than once; and 2) customers receiving direct access have indeed purchased 50 percent or more of their load from renewable sources. Since all transactions will go through the Independent System Operator, complete verification can be accomplished by cross-checking numbers filed by providers and suppliers with ISO transactions.

Penalties for falsely self-certifying could vary depending on the nature of the violation. Providers who fail to file the appropriate annual reports or do not include the proper information would be placed on six-months probation but still allowed to operate. At the end of the six months, the provider would then re-file. If still deficient, the providers registration would be canceled. Suppliers who knowingly allow their energy to be claimed by multiple providers would also face cancellation of their certification, as well as repayment of and loss of any future renewables funds.

Staff propose that the Energy Commission, or an independent non-government entity contracted by the Energy Commission, be responsible for certifying and monitoring certified renewable resource suppliers and providers. Re-certification will only be necessary if the status of a supplier has changed (through a repower or a previous loss of certification, as examples).

V. MICROCOGENERATION, VOC GENERATION, FUEL CELLS

Overview and Rationale

AB 1890 direct the Energy Commission to include consideration of the need for mechanisms to ensure the competitiveness of microcogeneration and cogeneration fueled by pollution. The legislation also required consideration of whether fuel cells should be treated as fuel switching for purposes of application of the Competition Transition Charge (that is whether fuel cell generated electricity would be exempt from the CTC, as is fuel switching). Several stakeholders provided proposals and comments on these issues during the Energy Commission's workshops. Staff will summarize stakeholder proposals and the rationale supporting the Staff proposals listed below in a forthcoming appendix.

Microcogeneration

Microcogeneration was specifically identified in section 854 of AB 1890. However, the legislation gives utilities the option, not the requirement, of seeking CTC exemption for microcogeneration facilities. Based on the energy saving aspects of microcogeneration, the recognition at the federal and state levels and most importantly from the customer perspectives, that cogeneration, specifically cogeneration primarily for self-generation purposes is indeed a demand side management strategy, staff recommends that all new microcogeneration installed for self-generation purposes be exempted from the CTC. Staff recommends that the Legislature should also be informed that the provisions of section 854 of AB 1890 may conflict with FERC's Order 888, which apparently directs that stranded costs should not be applied to cogeneration.

VOC Generation

Staff proposes that pollution-abating cogeneration which utilizes VOCs as fuel be explicitly exempted from the CTC. Staff also recognizes that larger than 1MW cogeneration systems, designed to bring companies into compliance with pollution regulations, may also be built. These larger facilities could be considered for exemption on a case-by-case basis.

Fuel Cells

There are two main issues dealing with fuel cells resulting from AB 1890. The first issue is whether fuel cells should be defined as an emerging renewable technology. The second issue is whether fuel cells should be treated as fuel switching for purposes of application of the CTC. Staff recommends that in its report to the Legislature the Energy Commission define fuel cells as a fuel switching technology for purposes of being exempted from the CTC. Furthermore, staff recommends that fuel cells be considered a renewable resource technology for those applications that utilize a renewable resource as the primary fuel.

VI. DEFINITIONS

Proposed Definitions

Renewable Resource Technology: A technology, or generating facility that employs a technology, that produces electricity from other than a conventional power source as defined by Section 2805 of the Public Utilities Code, provided that a power source utilizing more than 25% fossil fuel may not be included.

Section 2805 defines a "conventional power source" to be power derived from nuclear energy or the operation of a hydropower facility greater than 30 megawatts or the combustion of fossil fuels, unless cogeneration technology, as defined in Section 25134 of the Public Resources Code, is employed in the production of such power.

Existing Renewable Resource Technology: A facility that 1) uses a renewable resource technology, and 2) was in operation in California prior to September 23, 1996.

New Renewable Resource Technology: A facility that 1) uses a renewable resource technology; 2) is located in California and is newly constructed or substantially refurbished and placed in or returned to service on or before September 23, 1996, and 3) may use more than 25% fossil fuel input provided that only the portion of the facility's energy output from other than fossil fuel will be considered renewable energy.

Emerging Renewable Resource Technology: A facility that 1) uses a new renewable resource technology and 2) is determined by the California Energy Resources Conservation and Development Commission (Energy Commission) to be emerging from research and development and have significant near-term commercial potential (such as distributed photovoltaic technologies).

In-state Operation and Development: This term applies to renewable resource technologies that are physically located in the State of California.

Eligible Renewable Resource Provider: A retail electricity service provider (aggregator, broker, or marketer) selling power directly to end-use customers, at least 50 percent of which is from certified renewable technologies.